SBE: Medium: User-Centric Design of a Sonification System for Automatically Alarming Security Threats and Impact

Challenge:

- Enable usable security for users who are visually impaired

- Alarm users about attacks without overwhelming them

- Represent security warnings through unconventional and contemporary channels

- Help users comprehend attacks, meanings, implications, risks, and consequences

Scientific Impact:

- Understand how general users comprehend security attacks

- Introduce sonification, as a new approach, to enable usable security

- Communicate the risks of cyber attacks with users through sounds

- Build repositories of cyber attacks and representative sounds tagged with their emotional ratings

- Build a framework to automatically translate cyber attacks and warnings to representative sounds
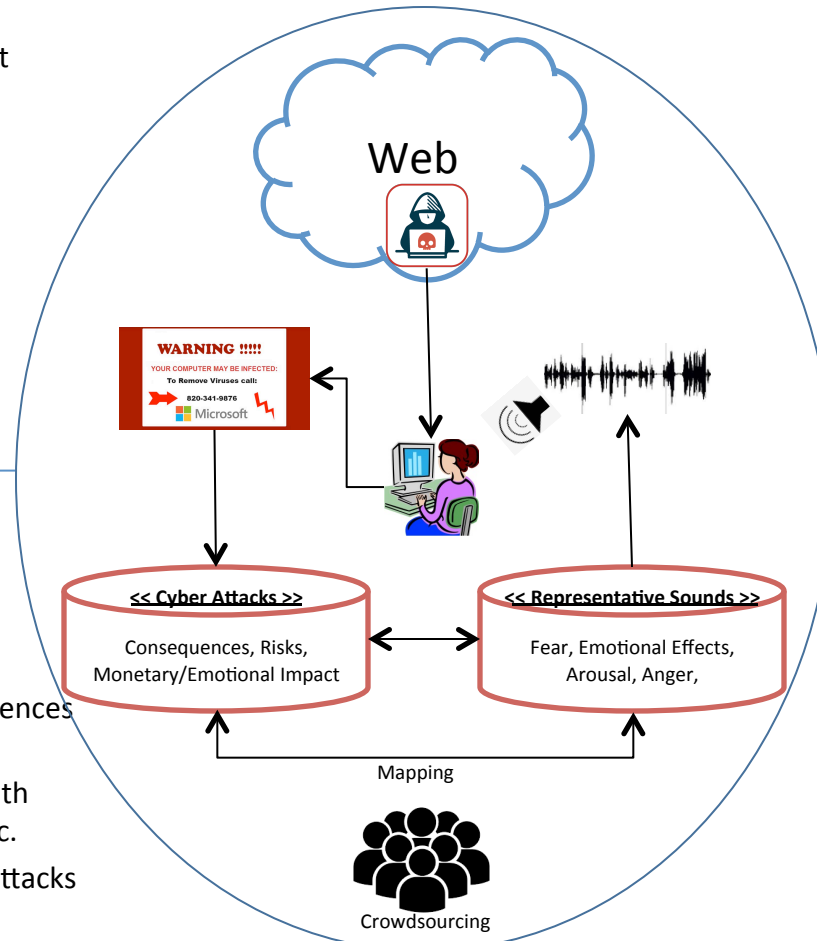
Solution:

- Use representative sounds to communicate risks, impact, and consequences of attacks to users

- Identify representative sounds semantically representing consequences of each group of attacks

- Label the representative sounds with emotional impact, arousal, fear, etc.

- Play representative sounds when attacks occur

Broader Impact:

- Auditory alarm users about attacks and the impacts without any needs for technical understanding

- Enable accessible and usable security for users, who are visually impaired

- The technology can be integrated into existing cyber security tools